METHOD TO CHARACTERIZE MATERIAL USING MATHEMATICAL PROPAGATION MODELS AND ULTRASONIC SIGNAL

ABSTRACT

The invention is directed to a system and method for detecting defects in a manufactured object. These defects may include flaws, delaminations, voids, fractures, fissures, or cracks, among others. The system utilizes an ultrasound measurement system, a signal analyzer and an expected result. The signal analyzer compares the signal from the measurement system to the expected result. The analysis may detect a defect or measure an attribute of the manufactured object. Further, the analysis may be displayed or represented. In addition, the expected result may be generated from a model such as a wave propagation model. One embodiment of the invention is a laser ultrasound detection system in which a laser is used to generate an ultrasonic signal. The signal analyzer compares the measured ultrasonic signal to an expected result. This expected result is generated from a wave propagation model. The analysis is then displayed on a monitor.